Name:	
Klasse:	Datum:

Mathematik

Lösungsbeispiele zu Gleichungssystemen

Additionsverfahren

	$\left\vert \begin{array}{l} 6x-2y+8z=24 \\ 4x-8y+4z=20 \\ 6x-4y+3z=16 \end{array} \right\vert$	$\left\vert \begin{array}{l} \cdot\ 2 \\ \cdot(-3) \\ \cdot\ 2 \end{array} \right\vert$
	$\left\vert \begin{array}{rrrr} 12x- & 4y+16z= & 48 \\ -12x+ & 24y-12z= & -60 \\ 12x- & 8y+6z= & 32 \end{array} \right\vert$	$\begin{array}{l} (1) \\ (2) \\ (3) \end{array}$
(1) + (2) (3) + (2)	$\left\vert \begin{array}{l} 20y+4z=-12 \\ 16y-6z=-28 \end{array} \right\vert$	$\left\vert \begin{array}{l} \cdot 3 \\ \cdot 2 \end{array} \right\vert$
	$\left\vert \begin{array}{l} 60y+12z=-36 \\ 32y-12z=-56 \end{array} \right\vert$	$\begin{array}{l} (4) \\ (5) \end{array}$
(4) + (5)	$\begin{array}{l} 92y=-92 \\ y=-1 \end{array}$	$\vert : 92$
in (4)	$\begin{array}{l} -60+12z=-36 \\ 12z=24 \\ z=2 \end{array}$	$\begin{array}{l} \vert +60 \\ \vert : 12 \end{array}$
in (1)	$\begin{array}{l} 6x-2\cdot(-1)+8\cdot 2=24 \\ 6x=6 \\ x=1 \end{array}$	$\begin{array}{l} \vert -18 \\ \vert : 6 \end{array}$

Autor: Ingo Ostwald (24.02.2019)

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Mathematik

Lösungsbeispiele zu Gleichungssystemen

Einsetzungsverfahren

$$\left|\begin{array}{l} 4^y \cdot 3^x = 3888 \\ x + y = 7 \end{array}\right| \qquad \left|-x\right.$$

$$\left|\begin{array}{l} 4^y \cdot 3^x = 3888 \\ y = 7 - x \end{array}\right| \qquad \begin{array}{l}(1)\\(2)\end{array}$$

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(2) in (1)

$$4^{(7-x)} \cdot 3^x = 3888$$

$$\frac{4^7}{4^x} \cdot 3^x = 3888 \qquad \left|: 4^7\right.$$

$$\frac{3^x}{4^x} = \frac{3888}{4^7}$$

$$\frac{3^x}{4^x} = \frac{243 \cdot 16}{4^7} = \frac{243}{4^5}$$

$$\frac{3^x}{4^x} = \frac{3^5}{4^5}$$

$$\left(\frac{3}{4}\right)^x = \left(\frac{3}{4}\right)^5$$

$$x = 5$$

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in (2)

$$y = 7 - 5 = 2$$